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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,768	12/12/2001	Paul A. Geel	25151A	8672

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2790 COLUMBUS ROAD
GRANVILLE, OH 43023

EXAMINER

BOYD, JENNIFER A

ART UNIT	PAPER NUMBER
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1771

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DATE MAILED: 06/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/020,768

Applicant(s)

GEEL, PAUL A.

Examiner

Jennifer A Boyd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1 and 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 6 is indefinite because polyethylene terephthalate fibers cannot be aramid fibers. According to Complete Textile Glossary, a polyester fiber (for example, polyethylene terephthalate) is any long chain polymer composed of at least 85% by weight of an ester dihydric alcohol and terephthalic acid. An aramid fiber is a long chain synthetic polyamide having at least 85% of its amide linkages (-NH-CO-) attached directly to two aromatic rings. For the purposes of examination at this time, the Examiner will not give weight to the limitation that the polyethylene terephthalate fibers are aramid fibers.

4. Claim 7 is indefinite because it unclear what "maintain their fiber character" means. Does the Applicant mean that the fiber does not melt at a temperature lower than 220 C? For the purposes of examination at this time, the Examiner will assume that the Applicant means that the fiber will not melt below 220 C.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 – 4, 6, 8, 11 – 12 and 15 - 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Heidweiller (US 3,622,445).

Heidweiller is directed to composite glass fiber webs.

As to claims 1 and 6, Heidweiller teaches a web comprising glass fibers and polyester fibers (Abstract). In Example II, the polyester fibers are polyethylene glycol terephthalate fibers (also known as polyethylene terephthalate fibers) (column 4, lines 1 – 5). The weight ratio between the glass fibers and the organic fibers, such as the polyethylene terephthalate fibers, ranges from 10:1 to 1:1 (Abstract). Thus, the glass fibers are present in a proportion of 50 - 100% and the polyethylene terephthalate fibers are present in a proportion of 10 – 50%. The web also comprises a binder (Abstract). The binder can be selected from a great variety of materials including polyvinyl alcohol (column 2, lines 50 – 70). The polyvinyl alcohol binder of Heidweiller is equated to the Applicant's "polyvinyl alcohol" and "secondary binder". The proportion of the binder is preferably 5 – 50 percent, calculated on the total weight of the web (Abstract).

As to claim 2, Heidweiller teaches that the glass fibers can be C-glass fibers or preferably E-glass fibers (column 1, lines 57 – 70).

As to claim 3, Heidweiller teaches that the E-glass fibers have a diameter of 4 – 15 microns (column 1, lines 60 – 65). In Example 1, the E-glass fibers have a length of 10mm (column 3, lines 20 – 25).

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As to claim 4, Heidweiller teaches that the polyethylene terephthalate fibers have a diameter of 13.2 microns (calculated by using a 1.5 denier polyethylene terephthalate fiber as used in Example II and assuming the density is 1.22 g/cm³ as stated in Understanding Textiles) and a length of 6 mm (column 4, lines 1 – 5).

As to claim 8, Heidweiller teaches that the binder can be in the form of fibers or water-dispersible granules (column 3, lines 1 – 5).

As to claim 11, Heidweiller teaches that the binder can be in the form of water dispersible granules, therefore, it could be a water-based emulsion or a solution-type binder.

As to claim 12, Heidweiller teaches a polyvinyl alcohol binder. As mentioned in the above paragraphs, the Examiner has equated to the binder to the “secondary binder” along with the polyvinyl alcohol.

As to claims 15 – 16, Heidweiller teaches that the proportion of the binder is preferably 5 – 50 percent, calculated on the total weight of the web (Abstract).

Claim Rejections - 35 USC § 102/103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5 and 7 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Heidweiller (US 3,622,445).

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Although Heidweiller does not explicitly teach the claimed melting point of polyethylene terephthalate above about 250C as required by claim 5 and maintaining their fiber character to at least 220 C as required by claim 7, it is reasonable to presume that melting point of polyethylene terephthalate above about 250 C as required by claim 5 and maintaining their fiber character to at least 220 C as required by claim 7 is inherent to Heidweiller. Support for said presumption is found in the use of like materials (i.e. polyethylene terephthalate fibers with similar diameters and lengths) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property of [melting point of polyethylene terephthalate above about 250C as required by claim 5 and maintaining their fiber character to at least 220C as required by claim 7 would obviously have been present once the Heidweiller product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977) as to providing of this rejection made above under 35 USC 102. Additionally, according to *Understanding Textiles* by Tortora, polyester typically melts at 249 C to 288 C.

Claim Rejections - 35 USC § 103

5. Claims 13 – 14 and 17 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidweiller (US 3,622,445).

As to claims 13 – 14 and 17, Heidweiller discloses the claimed invention except for that the web has glass fibers present in the amount of about 25 to 40 percent by weight of the fibers as required by claims 13 and 17 and the web has polyethylene terephthalate fibers present in the amount of about 60 to 75 percent by weight of the fibers as required by claims 14 and 17. It

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should be noted that the amount of glass fibers and polyethylene terephthalate fibers present in the web is a result effective variable. For example, as the amount of glass fibers increase, the compressive strength increases. As the amount of polyethylene terephthalate fibers increase, the tear strength increases. It would have been obvious to one having ordinary skill in the art at the time the invention was made to the web has glass fibers present in the amount of about 25 to 40 percent by weight of the fibers as required by claims 13 and 17 and the web has polyethylene terephthalate fibers present in the amount of about 60 to 75 percent by weight of the fibers as required by claims 14 and 17, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In the present invention, one would have been motivated to optimize the amount of glass and polyethylene terephthalate fibers to create a web with a proper balance of compressive strength and tear strength.

As to claim 18, the limitations of the patent are disclosed above.

6. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidweiller (US 3,622,445) in view of Helwig et al. (US 6,267,843).

Heidweiller teaches the claimed invention except fails to disclose that the polyvinyl alcohol binder in fiber form has a diameter of from about 6 to 16 microns and a length from 4 to about 25 mm.

Helwig et al. teaches a wet-laid nonwoven mat comprising glass fibers, polymeric binder fibers and/or powder and optionally polyvinyl alcohol (column 1, lines 55 – 63). The polyvinyl alcohol binder fiber can be type VPB101 from Kuraray Co (column 5, lines 5 – 15). According

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to Yamamoto et al. (US 4,483,976), Kuraray VPB101 has a denier of 1.3 and length of 4mm (column 5, lines 58 – 63). Assuming a density of 1.26 g/cm^3 as stated in *Polymers – A Property Database*, the fiber diameter is 12 microns.

It would have been obvious and necessary for one of ordinary skill in the art practicing the invention of Heidweiller to provide the details of the polyvinyl alcohol binder in fiber form. As the size and length of the binder fibers determine the strength of the bound web fibers, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use binder fibers with a length of 4 mm and a fiber diameter of 12 microns as suggested by Helwig in the invention of Heidweiller motivated by the expectation of successfully practicing the invention of Heidweiller.

7. Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidweiller (US 3,622,445) in view of Kinsley, Jr. (US 5,800,675).

Heidweiller teaches the claimed invention except fails to disclose that the polyvinyl alcohol binder in powder form has a particle size from about 50 to 250 microns.

Kinsley, Jr. teaches a paper-based product comprising a particulate binder (Abstract). The preferred binder is a polyvinyl alcohol powder (Abstract). The binder has a dry size diameter of 88 – 220 microns and a swollen size diameter of 176 – 440 microns.

It would have been obvious and necessary for one of ordinary skill in the art practicing the invention of Heidweiller to provide the details of the polyvinyl alcohol binder in powder form. As the size of the binder particles determine the strength of the bound web fibers, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a

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binder with a dry size diameter of 88 – 220 microns as suggested by Kinsley, Jr. in the invention of Heidweiller motivated by the expectation of successfully practicing the invention of Heidweiller.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A Boyd whose telephone number is 703-305-7082. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 703-308-2414. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Jennifer Boyd
June 3, 2003

